MECH 4382 – Senior Design Project II

Summer 2017
JSOM 2.714, T 1:00 – 5:00 pm

Instructor Contact Information

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Course Pre-requisites, Co-requisites and/or Other Restrictions

Pre-requisite:	MECH 4381
Co-requisite:	None
Other Restrictions:	MECH 4381 and 4382 must be taken in successive semesters

Course Description

Project-based capstone course. Student groups design, build, and test a device that solves an open-ended mechanical engineering design problem. MECH 4382, focuses on prototype construction and testing. (A prior course, MECH 4381 focuses on background research and engineering analysis.) As a designated MECH Writing-Intensive Course, MECH 4382 also focuses on the refinement of students' engineering communications skills and their use of writing as a critical-thinking and learning tool.

Student Learning Objectives/Outcomes

This class will address the following learning outcomes:

- Develop project management skills: work breakdown structure, manufacturing plan, cost estimation, resource allocation, and scheduling
- Carry out detailed component /system-level design and make decisions using evaluation and analysis tools
- Build and test a working prototype and perform design iterations
- Function in disciplinary or multi-disciplinary teams
- Document, report, present project progress and final results

Course Topics

This course is a continuation of MECH 4381 and focuses on building and testing a proof-of-concept prototype that demonstrates a solution to an engineering design problem. This course will emphasize many of the same concepts and skills introduced in MECH 4381. Most of the work in the course will be completed outside of the classroom under the direction of the Corporate Mentor and Technical Manager. The instructors may occasionally meet with the class as a whole to cover selected topics.

Textbooks and Materials

No textbook is required for this course. In most cases, students will need to research and collect information from sources relevant to their particular project. Textbooks and notes from previous courses will likely be useful additional resources. The course material will come from presentations and documents that will be distributed throughout the semester.

Grading Policy

The contribution of each item to the overall course grade is summarized in the following table. For deliverables submitted by the team, all members of the team are typically assigned the same score.

Item	% of Final Grade
Written Deliverables	25
Mandatory First Prototype	10
Expo	20
Engineering Director Performance Evaluation*	25
Technical Manager Performance Evaluation*	20
Total	**100**

Input for the performance evaluations will be obtained from sponsors, teammates, Technical Managers, Engineering Directors, and project support staff that you interact with during the course of the project. It is important to note that individual performance that is below expectations may result in a student's removal from a project team and/or final grades of F or I. Examples of detrimental behaviors include, but are not limited to, the following:

- Lack of meaningful participation in team activities
- Lack of meaningful contributions to the team's work
- Substantially unequal team member contributions
- Insubordination toward anyone involved in the project
- Unprofessional or unethical conduct (including actions while on project-related travel)
- Misuse of sponsor provided data or equipment
- Poor peer evaluations
- Actions which jeopardize the progress of the project team
- Substantially unfinished projects
- Incomplete on non-functional prototypes that resulted from a lack of effort
- Unacceptable or incomplete final documentation
- Failure to return sponsor supplied equipment

*For information on personnel roles and responsibilities, see the UTDesign Employee Handbook.

Course Policies

Teams

There are no changes to the teams assigned in MECH 4381. Each team will continue to work with your Corporate Mentor and Technical Manager. Remember that the roles of the Corporate Mentor and Technical Manager are strictly advisory. These individuals will not lead the project effort nor will they solve technical problems. It is ultimately the team's responsibility to complete the project and provide the requested deliverables.

UTDesign Expo

At the end of the semester, a time will be scheduled for the public presentation and demonstration of projects. All team members are required to attend and participate in all the events scheduled during this day. You should plan to be present for the entire duration of the event (approximately 6 hours, 11am – 5pm). The UTDesign Expo is scheduled for **Friday, August 11, 2017.**

Communication

You must use your official UTD email account for all email related to this course. Email will also be used by those involved in the course to communicate with you. It is expected that messages sent to the email address on record with the university will be received and read. You should check this email account at least daily so that information from sponsors, Technical Managers, Engineering Directors, and others are received and acted upon in a timely manner.

All key course documents and other materials will be available on the UTD learning management system (eLearning) website. Most assignments will also be submitted through this system as well.

Confidentiality & Intellectual Property

Non-disclosure agreements (NDA) and intellectual property (IP) agreements with sponsoring companies signed during MECH 4381 remain in effect for MECH 4382.

You should always treat sponsor information with care, regardless of the existence of an NDA. In particular, students should make confidentiality requirements a priority when using computer resources (email, file storage, social media, etc.). Additionally, all publically presented materials (presentations, posters, etc.) must be cleared by the sponsor first. If you have any doubts about these matters, consult your Technical Manager or Engineering Director.

Teams will be provided with a dedicated directory on the Box file sharing service for secure storage of electronic documents related to their project. These directories will be configured so that team members will only be able to access their assigned directory. Web-based storage services such as Google Drive, Dropbox, etc. should not be used without sponsor approval.

Course Assignments & Deliverables

No late assignments will be accepted without prior agreement of an Engineering Director. This policy is strictly enforced because it is an integral part of developing the skills expected in the professional community. Teams are advised to have a procedure in place to make sure that team deliverables are submitted on time. A late team deliverable will result in no credit for all team members. Note that computer problems, lack of network access, and extended upload times for large documents are not acceptable excuses for late submissions. Submitting deliverables well ahead of deadlines is the best way to avoid complications due to unexpected, last-minute problems. If you encounter any difficulties submitting a deliverable through eLearning, you may email it to your Engineering Director before the submission deadline.

Due to diversity of projects and activities in this course, team members are expected to communicate to their Engineering Director any issues which they feel may affect their performance in this course. Examples of such issues include difficulties with team members or others involved in the project, lack of needed resources, etc. If your team feels that circumstances beyond your control will affect your ability to meet a deliverable date, you should consult with your Engineering Director in advance of the submission deadline to discuss the situation. Extensions will only be considered in rare circumstances and with proper justification.

Workload

This course will require you to work on realistic and challenging engineering projects. Consequently, you should expect to spend a considerable amount of time outside of class working on your project. Be aware of this requirement and plan your schedule accordingly. Team members with significant extra-curricular

obligations (especially jobs) should be aware that they will need to be available to fully participate in all UTDesign activities.

Important Note: Because the summer session is significantly shorter than the fall and spring semesters (11 vs. 15 weeks), a higher level of effort is required to complete projects in this compressed timeframe. You should pay particular attention to the unique schedule constraints imposed by the length of the summer term. As a guideline, at least 15 hours of project work per week from each student is typically required for successful project completion.

Computers, Cell Phones, Mobile Devices, etc.

Laptop computers, tablets, cell phones, and similar devices may be used during class time only for course-related activities such as taking notes and participating in in-class activities. Use of these devices for any other purpose during class time is not permitted.

Attendance

Attendance at all UTDesign scheduled activities is mandatory. Additionally, you are expected to attend and participate in all meetings with your Corporate Mentor, Technical Manager and project team. Poor attendance will impact your individual performance evaluation.

Survey

Students will be expected to complete a survey as part of a course assignment. The results of the survey will be used to help improve the UTDesign Program. Once data is collected, student names will be disassociated from the results.

Off-campus Course Activities

Projects in this course will likely involve an occasional need to travel to a sponsor's office or other location for meetings, presentations, site visits, etc. Students are expected to comply with all university policies related to off-campus travel. A link to these policies can be found in the following section. In general, travel reimbursements will not be provided.

Team members are expected to conduct themselves with professionalism and comply with all university regulations when traveling or participating in activities at a sponsor's site. Additionally, you are expected to comply with all standard visitor policies and procedures when visiting a sponsor's site. Prior to a visit, you should discuss any special requirements with your Corporate Mentor.

Under no circumstances is a student obligated to participate in any off-campus activity which, in their judgment, is unsafe or violates their moral or ethical beliefs. In such circumstances, the student should politely state their preference to not participate. Additionally, sponsors are expected to treat all students equally and respectfully. Students should feel free to report any concerns to their Engineering Director.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.